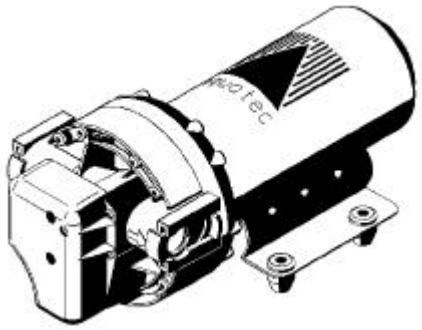
User's Manual and Installation Guide

Aquajet RV Series
Aquajet ES Series



Please read the following instructions before attempting an installation. When properly installed, both the Aquajet RV and ES Series can be used in virtually any existing RV.
If you prefer to have the pump professionally installed, contact Aquatec (949-225-2200) to locate your nearest authorized service center.

WARNING

The 5-chamber Aquajet RV and ES Series are more powerful than most existing RV water pumps and, as a result, may draw more current (Amps) than the pump(s) they replace. It is imperative that any power supply, fuses/circuitbreakers, wiring, switches, connectors, or controllers that are used to supply 12 VDC to the pump are adequately sized. Inadequately sized components may overheat, causing an electrical fire.

When installing either an Aquajet RV or ES Series pump, ***positive voltage (+12VDC) must be connected to the Aquajet's red fused leadwire.*** Reversing polarity will instantly blow the fuse and may permanently damage the controller.

If you are uncertain with respect to any of this information, Aquatec highly recommends that a qualified technician perform your installation and determine the existing polarity of your current wiring.

Safety Tips:

1. Never operate the pump in an atmosphere where flammable gases may be present, since arcing at the motor brushes or switch contacts may cause an explosion.

2. After extended operation, or if malfunctioning, metal surfaces of the pump may become hot and cause burns if touched. If this occurs, disconnect electrical power and wait 30 minutes before touching pump.

3. Never mount the pump where the surface temperature of the motor or the controller (200 F maximum) may cause ignition of the surrounding materials.

4. Do not wrap the pump with an insulating material or enclose it so tightly that air circulation around the pump is prevented. The pump will generate approximately the same amount of heat as a 75 watt lightbulb.

5. The pump should be mounted in a dry location away from any heat source(s).

6. Pumphead materials are designed for use with potable water only and should never be used with petroleum products.

7. The pump is equipped with a pressure sensing demand switch which controls the maximum operating pressure as set at the factory. Never subject the pump to pressures above 80 PSI maximum.

8. Always consider electrical shock hazards when working with and handling electrical equipment. If uncertain in your abilities, please consult an electrician.

9. Both the Aquajet RV and ES Series are equipped with an automatically resetting thermal protector. If a pump is not running, it may restart at any time.

10. Both the Aquajet RV and ES Series include a fuse-holder. It is important to ***use only a 15 amp AGC automotive type fuse for the Aquajet RV Series and a 10 amp AGC fuse for the Aquajet ES Series.*** Once again, use only these types of fuses with these specific pumps.

11. It is necessary to use a screen filter between the water holding tank and the pump to prevent debris from entering the pump. Particulate matter may cause the valves inside the pump to stick open. This filter needs to be cleaned on a regular basis, or it will restrict water to the pump.

12. **If water is not drained from the system during freezing temperatures, damage to the pump and the plumbing is likely:**
    a. Drain the water holding tank.
    b. Open all faucets and run the pump to expel all water.
    c. Disconnect inlet and outlet fittings and run pump to remove residual water from the pump.
    d. Leave fittings disconnected from pump.

Installer qualifications: If you intend to install either the Aquajet RV or ES Series without professional assistance, you should clearly be "handyman" competent enough to do simple low voltage electrical wiring, crimp connectors, obtain voltage measurements, understand polarity as well as schematics which illustrate relay connections. Additionally, you should be comfortable with water system plumbing, installing hose clamps, using Teflon tape, and removing/re-tightening compression fittings.

A typical Aquajet installation takes between 1 - 2 hours and requires the following:

Basic Tools: Flashlight. Voltmeter, Wire Stripper/Crimper, Standard Screwdriver,
Phillips Screwdriver, Hose cutter, Poly-grip, 8" Crescent Wrench, bucket, towels.
Depending on the RV's layout, electrical and plumbing configuration, additional hardware may be needed for a successful pump installation.

Electrical Supplies: Relay, associated connectors, wire, electrical tape and mounting hardware may be needed. For plumbing the pump to rigid (polybutylene or PEX) tubing, a flexible connector hose is strongly recommended for the pressure side. If the Aquajet pump is mounted at a different location than the old pump, flexible connector hoses will be required on both the inlet and outlet side. A screen-filter should always be used between the RV water tank and the pump.

Planning the installation ("AQUAJET RV SERIES" ONLY):

1. Determine whether or not your RV is currently using an 'Intellitec' pump controller (i.e. three or more "momentary" type switches which can be used to turn the pump on/off.). There are at least four (4) different types of Intellitec controllers currently in use, but not all of them can be used with the Aquajet RV. **Specifically, only a four terminal, 10 or 15 Amp rated Intellitec controller can be used to directly control the Aquajet RV. Intellitec 7 Amp, 3 Amp or non-rated controllers should NEVER be used to switch the load of the Aquajet RV.**

   The Intellitec controllers are typically located in the pump compartment (on some Fleetwood vehicles, however, they are located near the circuit breaker panel under the refrigerator). Once you've located the controller, before taking anything apart, make a sketch of the existing wiring including the colors of the wires and how they are attached. If you do have an Intellitec controller that does not say either "10 Amp" or "15 Amp" on the label, then you must either:

   a) Replace it with a 10 or 15 Amp rated controller. For your convenience, Intellitec's phone number is (708) 268-0010.

   b) Procure a 30 Amp rated relay (through either a local automotive store or directly through the Aquatec catalog, product number 20-267) to augment your existing controller. Please refer to schematics figures 3, 4 and 8.

2. Determine whether or not your present wiring is capable of supplying 10 Amps without generating an excessive voltage drop. For a 10 Amp load, 14 AWG can typically be used up to 10 ft distances, 12 AWG up to 20 ft distances, and 10 AWG for distances of more than 20 ft. You can also determine if your wiring is adequate by using a Voltmeter, as follows:

   a) Probe inside the wirenuts that connects the existing pump.
   b) Write down voltage at pump with all valves closed and pump inactive. This is your nominal battery voltage.
   c) Open a faucet or faucets so you get the pump running continuously.
   d) Measure the voltage again at the pump wirenuts.
   e) Note the running voltage.
   f) Subtract the running voltage from the nominal voltage. This is your "voltage drop".

   If the voltage drop with your existing pump (typically 5 Amps) exceeds 1 Volt you will need to pull a new heavier (10-12AWG) 'hot' wire to the pump AND use a 30 amp relay (referenced in section 1b above) to connect your Aquajet RV (see figures 1 and 2).

Typically, if your RV uses one (1) switch to control the pump, the wiring is short and should prove sufficient. If your RV has two (2) rocker-style switches you will see significant voltage drops and thus both the relay and the new heavier "hot wire" will be required.

Locate the battery and the fusebox for the pump. Identify which fuse protects the pump. Determine which source of power from which it will be simplest to pull a hot wire to the pump. Plan the routing of the wire and aproximate the length of wire required.

3. Determine the optimal location for the Aquajet RV. If possible, plan to position the Aquajet pump horizontally, with its rubber feet resting on a "floor-like" surface rather than mounted on a wall. Take into consideration the 1/16 hex adjustment screw on the Aquajet pump-head so you have access to it after the installation. **Never mount the pump in an area where gasoline vapors are present, as the motor and heatsink of the speed-controller may get hot (up to 200 F) after extended running.** Locate the Aquajet RV at least one inch away from any wall surface. In most cases, you'll be able to mount the Aquajet RV very close to where the old pump was located.

4. Survey the existing plumbing and identify the suction line (i.e. the line going from the water holding tank to the pump). If there is not a screen-filter currently on this line, then one should be procured for the Aquajet installation (several brands are available at any local RV dealer). For the quietest possible operation of the Aquajet RV, you should try to isolate the pump mechanically from your RV's typically hard Polybutylene or PEX tubing. If your RV is currently plumbed with soft-walled, reinforced hose (see Figure 5), then your system should be perfectly sufficient as is. By installing a piece of IAPMO approved cold water hose (such as 'Accuflex' Series 136) between the pump outlet port and your RV's hard plumbing, you will achieve the quietest possible pump operation. Aquatec also offers, as an optional accessory, a 39" long pre-assembled hose with fittings (Aquatec product number 25-174) that will adapt directly to the Aquajet RV and your existing plumbing. Please refer to Figures 6 and 7.

5. At the end of your survey you should have determined how to wire the Aquajet pump. Your alternatives are illustrated in Figure 1 ("no change", also applicable for single switch systems), fig2, fig 3 , fig 4 or fig 8. You should also have determined how to plumb the pump. Your options are fig 5, 6 or 7. Always make sure you have all hardware needed before you start the actual installation.

Planning the installation ("AQUAJET ES SERIES" ONLY):

The Aquajet ES Series was designed specifically for the RV aftermarket and, as a result, should be compatible with the existing electrical wiring for most RVs. Because the Aquajet ES Series uses a lower amperage motor than the Aquajet RV Series, installation is generally simplified. Oftentimes, installation is as simple as removing the wirenuts connecting the existing water pump and then reconnecting the existing wiring (keeping careful track of polarity) to the Aquajet ES.

Before installation, however, you should insure that your particular RV does not require any electrical modifications to run the Aquajet ES, as follows:

1. Determine whether or not your existing wiring can supply 6.5 Amps to the Aquajet ES without generating an excessive voltage drop or overloading any control component. You should check specifically for three (3) things:

    a. Determine whether your RV is currently using an Intellitec pump controller. The Aquajet ES Series is compatible with most common rated versions (7 Amp, 10 Amp, 15 Amp). However, if you have either a 3 Amp or non-rated contoller, you should procure a 30 Amp rated relay to augment your existing controller. These 30 Amp relays are available through local automotive stores or through Aquatec directly (P/N 20-267).

    If necessary, please refer to Diagram 8 at the back of this User's Guide for additional information.

    b. Check your RV Owner's Manual for the recommended fuse rating for the pump branch circuit. If your recommended rating is rated 10 Amps or more, you can proceed directly with the electrical installation. If your recommended rating is less than 10 Amps, you should procure a 30 Amp rated relay as referenced above.

    If necessary, please refer to Diagrams 1 and 2 at the back of this User's Guide for additional wiring instructions.

    c. If there are two (2) or more switches in your RV which independently control your pump, you may experience excessive voltage drops in your existing circuitry. Using voltmeter, test voltage at the pump with the pump running (refer to Diagram 1 at the back of this User's Guide). With either a fully charged battery or a running generator, you should be getting at least 11 volts at the pump. If not, you should procure a 30 Amp rated relay as referenced above.

2. Determine the optimal location for the Aquajet ES. If possible, plan to position the Aquajet pump horizontally, with its rubber feet resting on a "floor-like" surface rather than mounted on a wall. Take into consideration the 1/16 hex adjustment screw on the Aquajet pump-head so you have access to it after the installation. **Never mount the pump in an area where gasoline vapors are present, as the motor and heatsink of the speed-controller may get hot (up to 200 F) after extended running.** Locate the Aquajet ES at least one inch away from any wall surface. In most cases, you'll be able to mount the Aquajet ES very close to where the old pump was located.

3. Survey the existing plumbing and identify the suction line (i.e. the line going from the water holding tank to the pump). If there is not a screen-filter currently on this line, then one should be procured for the Aquajet installation (several brands are available at any local RV dealer). For the quietest possible operation of the Aquajet ES, you should try to isolate the pump mechanically from your RV's typically hard Polybutylene or PEX tubing. If your RV is currently plumbed with soft-walled, reinforced hose (see Diagram 5), then your system should be perfectly sufficient as is. By installing a piece of IAPMO approved cold water hose (such as 'Accuflex' Series 136) between the pump outlet port and your RV's hard plumbing, you will achieve the quietest possible pump operation. Aquatec also offers, as an optional accessory, a 39" long pre-assembled hose with fittings (Aquatec product number 25-174) that will adapt directly to the Aquajet ES and your existing plumbing. Please refer to Diagrams 6 and 7 at the back of this User's Guide.

Installation:

1. Using Voltmeter, determine polarity of the wiring to the existing pump(s).

   Unfortunately, there is no standardized color scheme for RV wiring (most RVs , however, seem to use red for the positive lead and black for the negative lead). Regardless of your specific configuration, positive voltage (12VDC) must be connected to the RED (fused) leadwire of the Aquajet RV. Reversing this polarity will instantly blow the in-line fuse and may permanently damage the controller. Mark the positive (hot) RV wire with a piece of tape.

2. Turn power "off" to existing pump(s).

3. Open a faucet, bleed off all existing pressure, then close the faucet again.

4. Disconnect the main power to the pump (either at battery or fuse panel).

5. Remove the wire-nuts from the leads to the old pump.

6. Steps 1 and 2 of the earlier 'Installation Planning' section should have determined the applicable wiring method. As appropriate, wire the Aquajet pump as per Schematics 1, 2, 3, 4 or 8

7a. [For old pump outlets connected to hose, as in Figure 5]

   Insert O-ringed end of (Qest) threaded adapter into outlet port (marked with arrow pointing away from pump) of the Aquajet pump. Lock fitting in place by pushing down retainer slide.

7b. [For old pump outlets directly connected to hard tubing, as in Figure 6].

   Insert the O-ringed elbow fitting of the Accuflex hose adapter (sold separately) into the outlet port of the Aquajet pump. Lock fitting in place by pushing down retainer.

8a. [If the Aquajet pump is to be directly plumbed to the existing inlet filter/fitting, as in Figures 5 and 6]

   Insert the O-ringed end of threaded adapter into inlet port (look for arrow pointing towards the heatsink of the controller) of the Aquajet pump. Lock fitting in place by pushing down retainer slide.

8b. [If the Aquajet pump is to be remote mounted, as in Figure 7]

   Insert the O-ringed elbow fitting of the Accuflex hose adapter (sold separately) into the inlet port of the Aquajet pump. Lock fitting in place by pushing down retainer slide.

9. Remove the mounting screws from the old pump.

10. Place a towel under the inlet port (suction side) of the existing pump(s) and quickly remove the connecting fitting/filter.

11. Re-attach the filter/inlet fitting to the applicable adapter on the inlet side of the Aquajet pump.

12. If an Accuflex hose adapter is used on the outlet side (see Figures 6 and 7), place the other end of the hose adapter up high. This should stop water from being siphoned out.

13. Place a towel under the outlet port (pressure side) of the existing pump(s) and remove the connecting fitting.

14. Remove the old pump.

15. Position the Aquajet pump into its intended mounting place.

16. Drive the mounting screws (Aquatec recommends # 10 screws, 1.5" long, to be used with washers) into the floorboard. Be sure to stop just as the screw heads touch the washers so you do not compress the rubber mounting grommets.

17a. [If you are plumbing per Figure 5]

Place a bucket under you plumbing system's pressure hose, have an assistant open 2 inside faucets and drain water from the pressure line. Connect the pressure hose fitting to the Qest adapter on the pump outlet side.

17b. [If you are plumbing per Figures 6 or 7]

Place the open end of the Accuflex tubing from the Aquajet outlet port into the bucket.

18. Reconnect the main power to the pump/relay using fuse box or battery.

19. Have an assistant briefly power up the pump using one of the RV's standard "pump switches".

20. Water should be flowing into bucket (see Figures 6 and 7) or into the sinks (see Figure 5)

21. Allow Aquajet RV to run for 10-15 seconds to get rid of all air inside the pump, then power down the pump.

22. Coil the Accuflex outlet tubing (pulsation dampener) and connect the pressure side Qest fittings. Use tie-wraps if necessary to insure that the tubing will not rattle.

23. Power up the pump again and check for leaks. Tighten fittings where necessary.

24. Close all faucets and wait for the pump to slow down and eventually stop. If a continuous low 'whining' sound is heard from the pump, re-check the voltage at the pump terminals (it should be 10.5 V minimum). If necessary, use 1/16" hex-key and turn the pressure adjustment screw on the controller counter-clockwise.

25. Open the most commonly used faucet to a typical flow level. Observe the pump - it should be running continuously at a low speed. If the pump is "cycling", use 1/16" hex key to turn the pressure adjustment screw on the controller clockwise. Return to step 24 and verify that pump shuts off properly.

26. Your pump should now be ready for use. Power down the pump when there is no need for water.

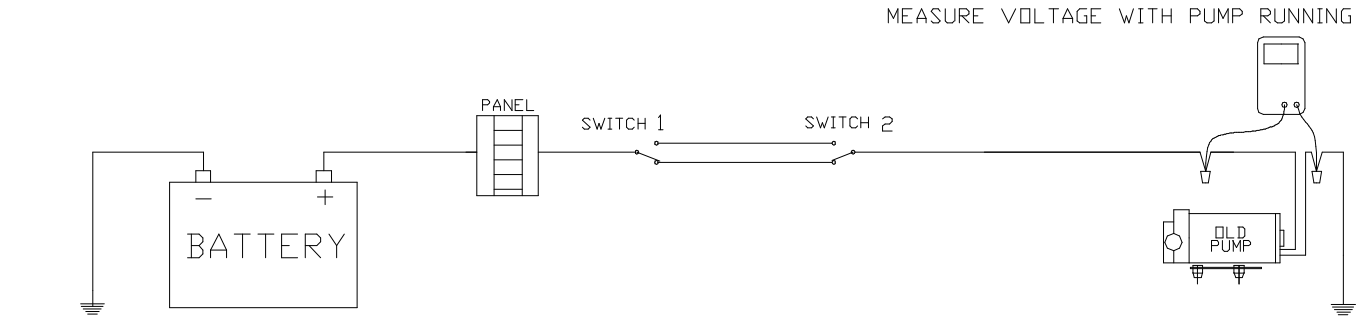


FIGURE 1 TYPICAL RV TWO SWITCH WIRING

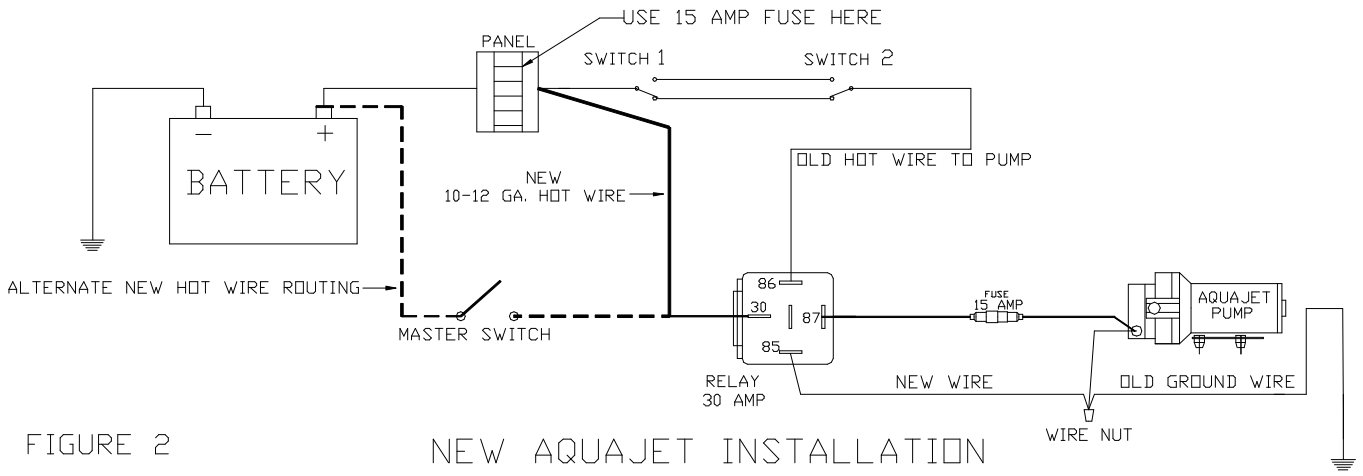


FIGURE 2 NEW AQUAJET INSTALLATION

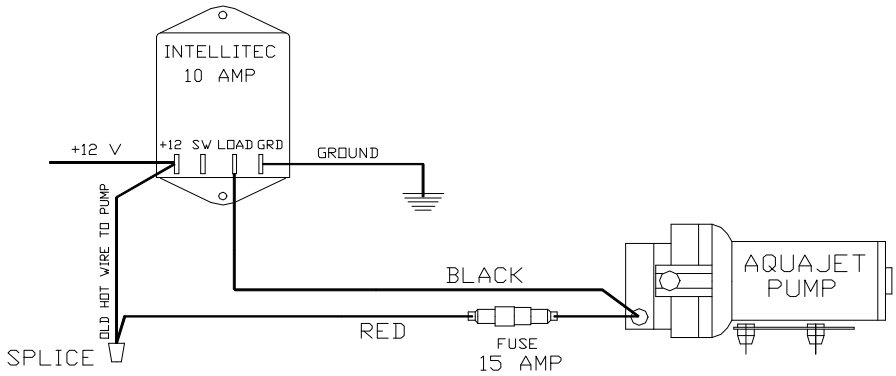


FIG.3

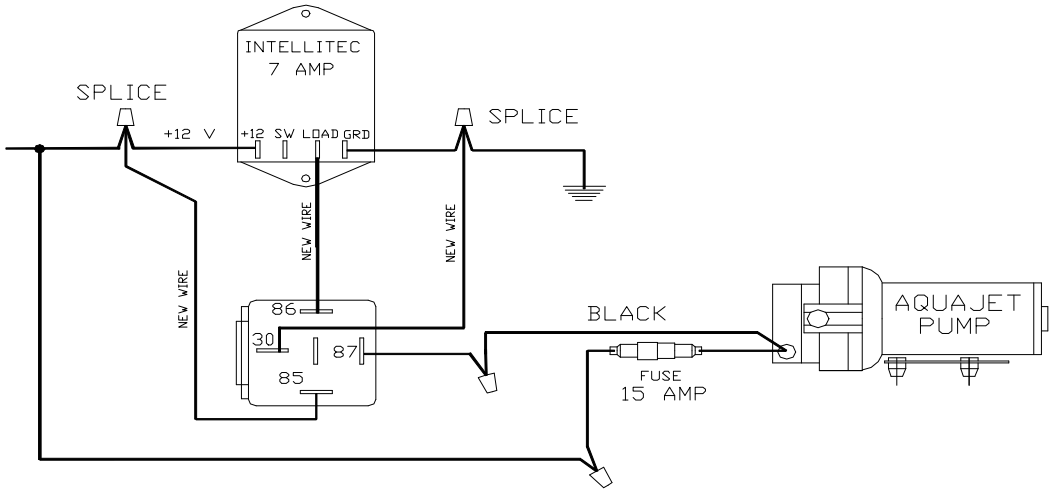
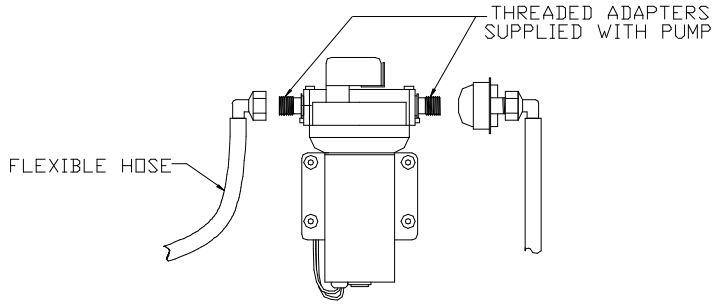
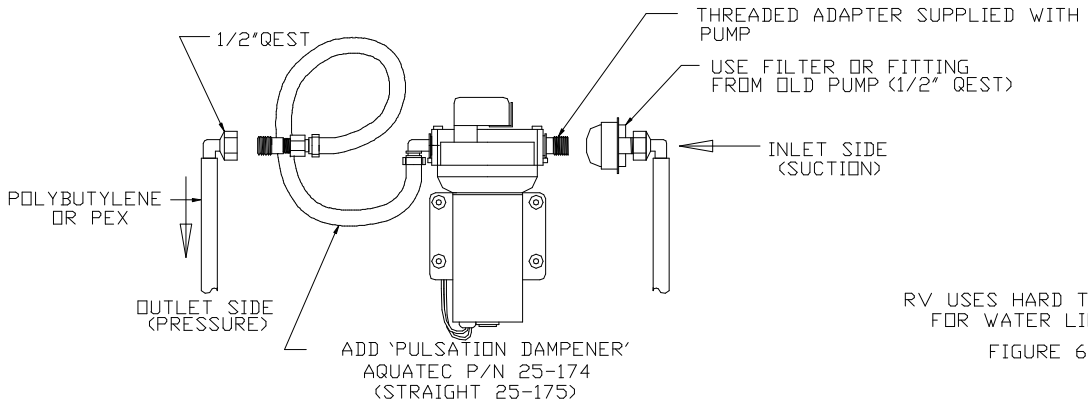


FIG.4



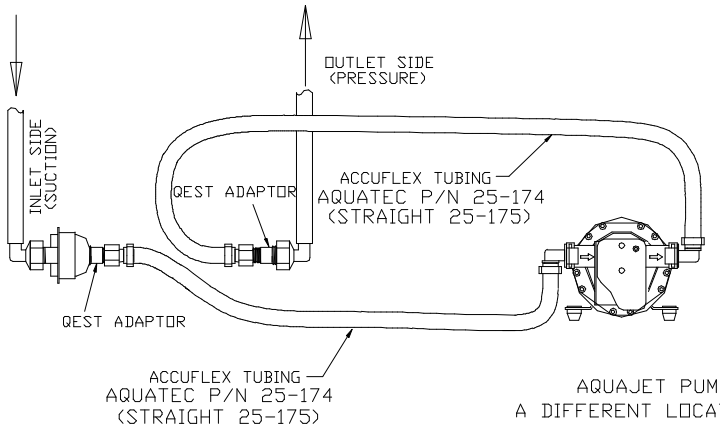
RV USES FLEXIBLE
HOSE FOR WATER LINES

FIGURE 5



RV USES HARD TUBING
FOR WATER LINE

FIGURE 6



AQUAJET PUMP TO BE MOUNTED IN
A DIFFERENT LOCATION THAN ORIGINAL PUMP

FIGURE 7

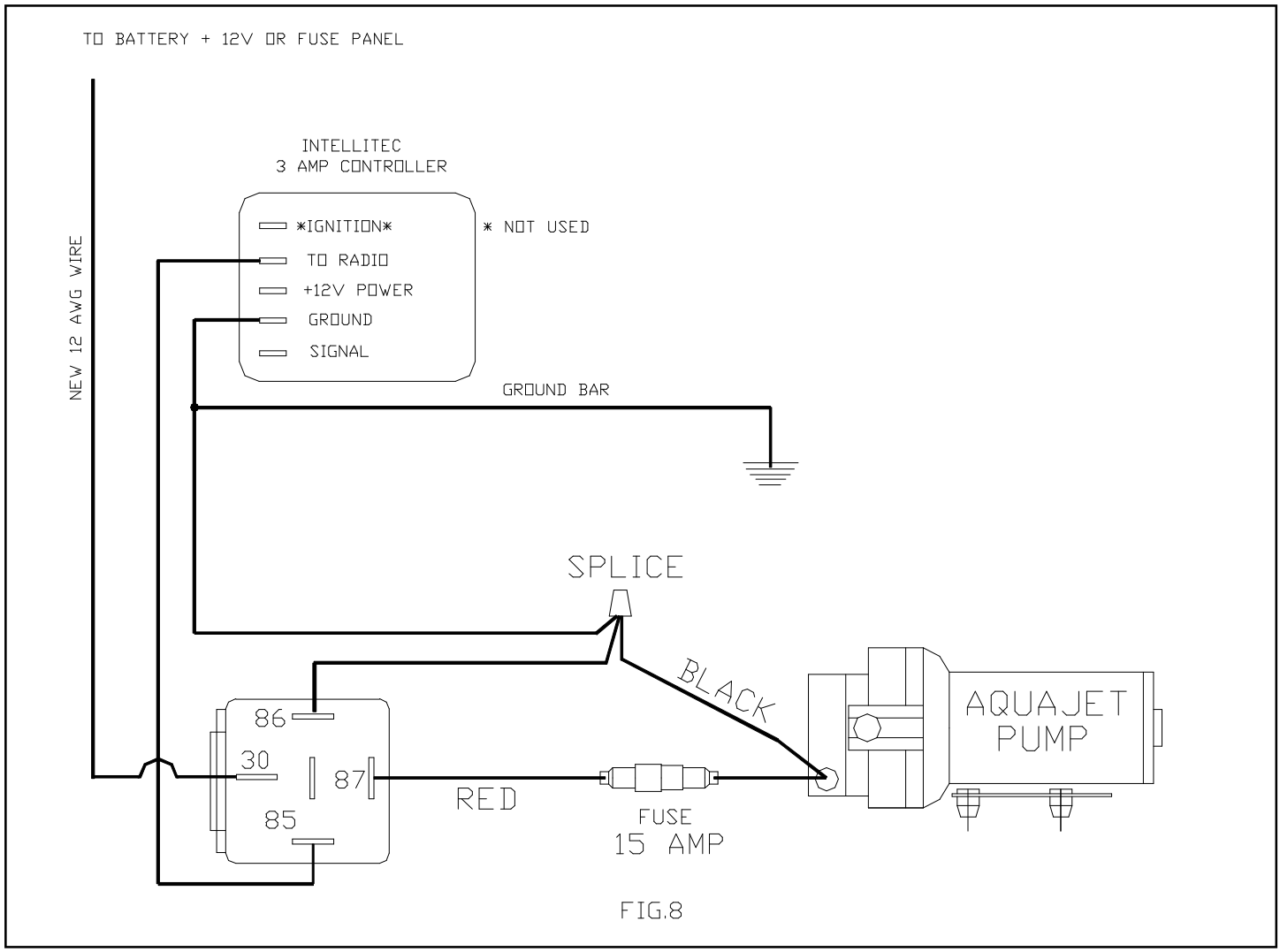

TO BATTERY + 12V OR FUSE PANEL
NEW 12 AWG WIRE
INTELLITEC
3 AMP CONTROLLER
IGNITION
TO RADIO
+12V POWER
GROUND
SIGNAL
* NOT USED
GROUND BAR
SPLICE
BLACK
AQUAJET
PUMP
86
30
87
85
RED
FUSE
15 AMP

FIG.8

AQUATEC WATER SYSTEMS, INC.

WARRANTY

Model: Aquajet RV and ES Series

Aquatec Water Systems, Inc. ("Aquatec") warrants its Model Aquajet RV Pumps (Part Numbers 5503-4V15-B636, 5503-AV15-B636, 5502-6V15-B668, and 5502-AV15-B668) to be free from defects in material and workmanship under the following terms:

The duration of the warranty will be for a period of 2 years from date of shipping from an Aquatec warehouse. Aquatec's obligation under this warranty shall be limited to, replacing or repairing at Aquatec's discretion, any such product or part which is returned to Aquatec's factory with a Return Material Authorization Number (RMA No.) and upon evaluation, product is deemed defective under the terms of warranty to Aquatec' satisfaction. Transportation charges will have to be pre-approved by Aquatec or prepaid by customer. No credit will be allowed against future purchases for items returned as defective under the terms of the warranty.

This warranty does not extend to any products, which have been altered or modified outside the Aquatec factory, not does it apply to units that are returned in an unassembled condition. Furthermore, this warranty does not cover any damage or defects occurring from customer's failure to follow pump label instructions or Operational and Installation Guidelines. The warranty guarantees that pump will perform to Aquatec's flow and pressure specifications through out the life of this warranty, under normal operating conditions. The warranty does not cover wear, appearance, misapplication or external water damage. If the returned product is not found to be defective under the terms of this warranty, customer will be responsible for repair or replacement costs.

This is a Limited Warranty. It covers the product only and the extent of the coverage is limited only to the cost of the product. As the manufacturer has no control over shipping, handling and installation, the warranty cannot cover water damage, or any other damage, caused by a leak or other malfunction.

This warranty is in lieu of all other warranties, expressed or implied, and no person is authorized to give any other warranty or assume obligation or liability in Aquatec's' behalf. Aquatec shall not be liable for any indirect, incidental or consequential damages of any kind incurred by the reason of the use or sale of any defective product or part.

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